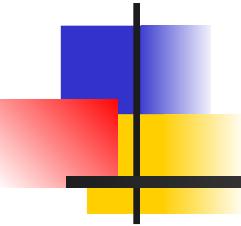


Clinical Reviews of Chlamydia and Gonorrhea



Presented by

Charles L. Heaton, MD

Professor of Dermatology

University of Cincinnati

College of Medicine



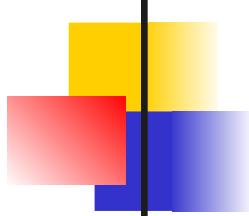
Clinical Reviews of Chlamydia and Gonorrhea

Purpose

- Define the problem
diagnosis & management

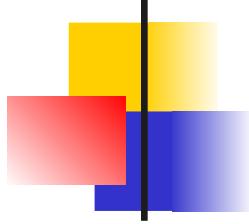
of Chlamydia
Gonorrhea





Clinical Reviews of Chlamydia and Gonorrhea

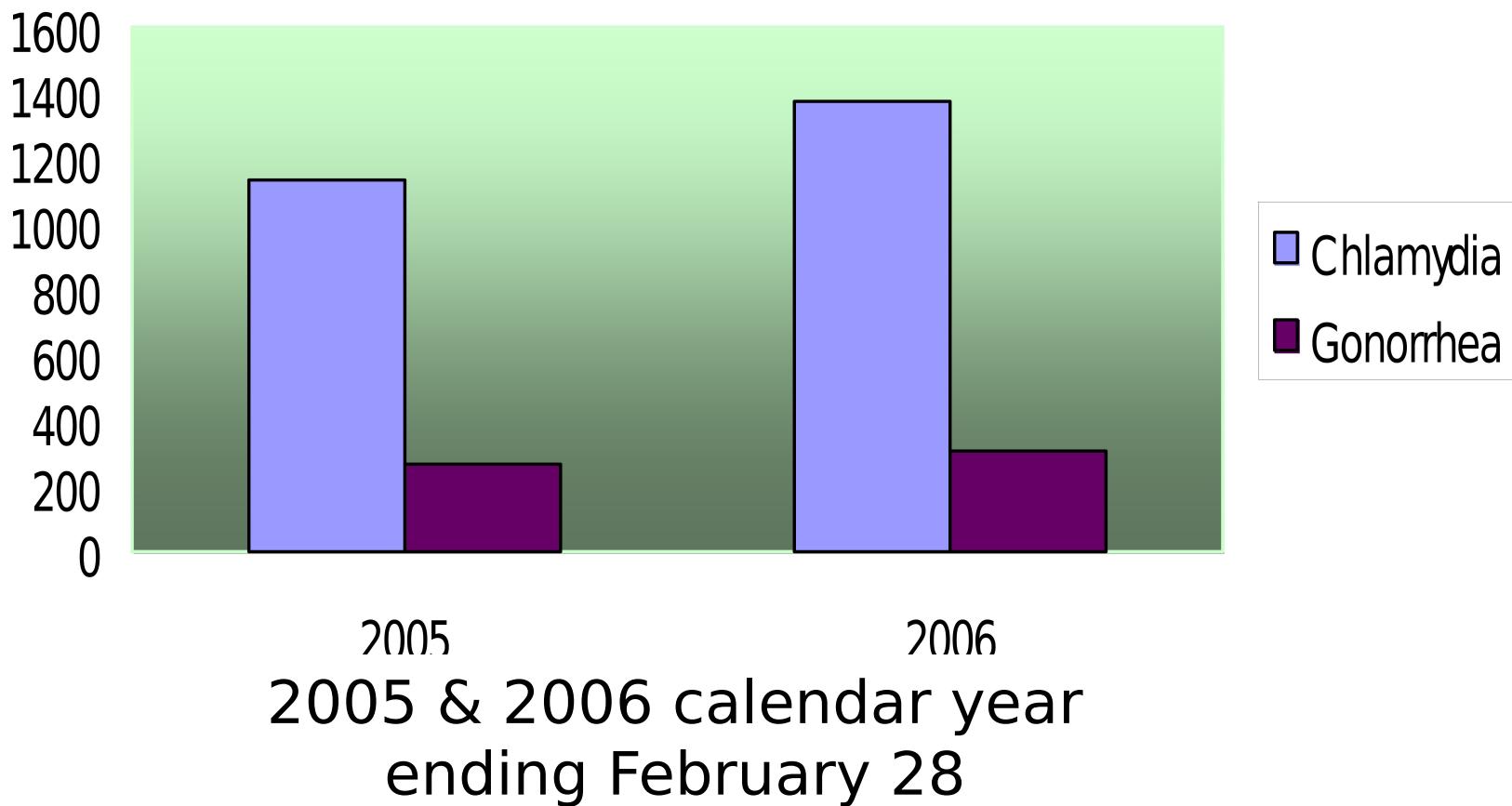
- National STD/HIV Prevention training Center website information
 - http://depts.washington.edu/nnptc/core_training/clinical/index.html
- Cincinnati STD/HIV training course CD's and website archived videos
 - <http://www.stdptc.uc.edu>



Incidence

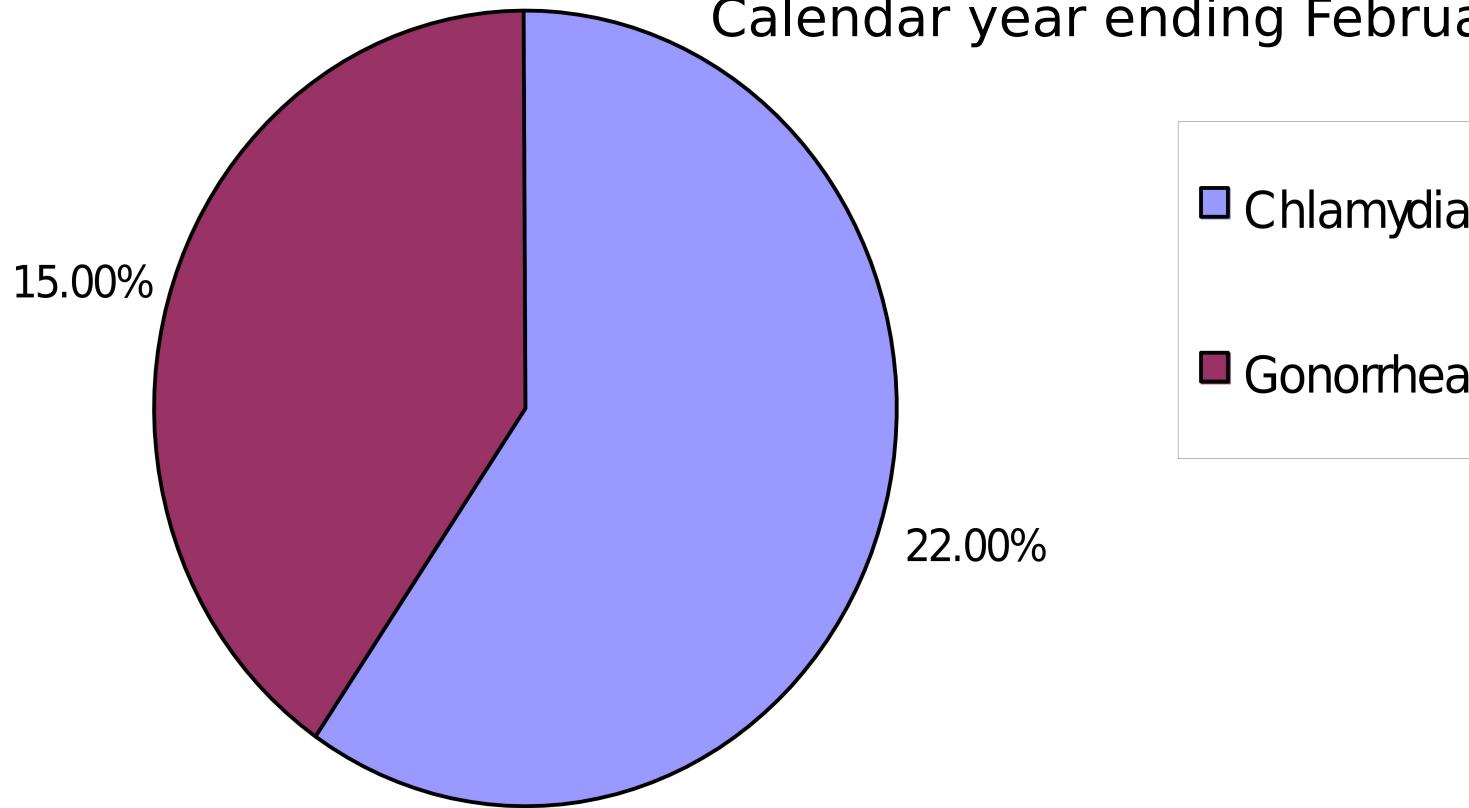
- Chlamydia
 - Approximately 3-4 million estimated cases in the USA per annum

US Army Medical Facilities

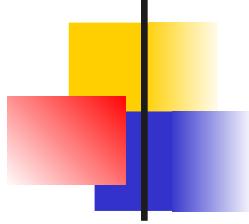


Total Increase from 2005-2006

Calendar year ending February 28



- Chlamydia
- Gonorrhea

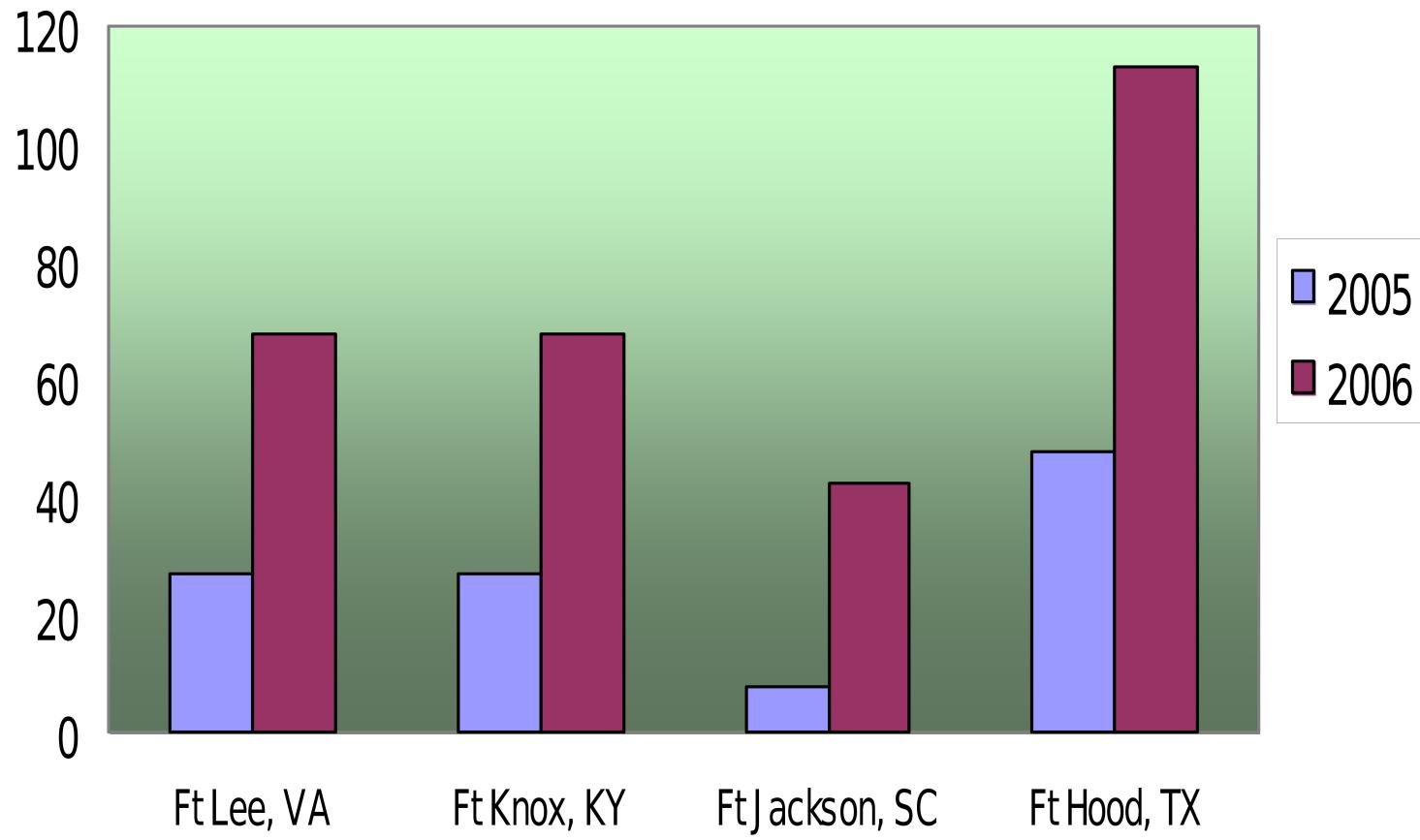


Incidence

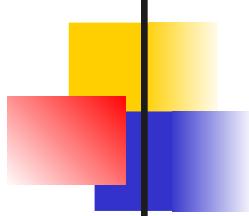
- Chlamydia
 - Prevalence in selected populations:
 - STD clinics: 7-25%
 - Family Planning: 3-15%
 - Prenatal clinics: 5-10%
 - Managed care or private practice (young women) 3-5%
 - School-based clinics 5-15%
 - Homeless youths: 10-15%

US Army Medical Facilities

Chlamydia



**2005 & 2006 calendar year
ending February 28**



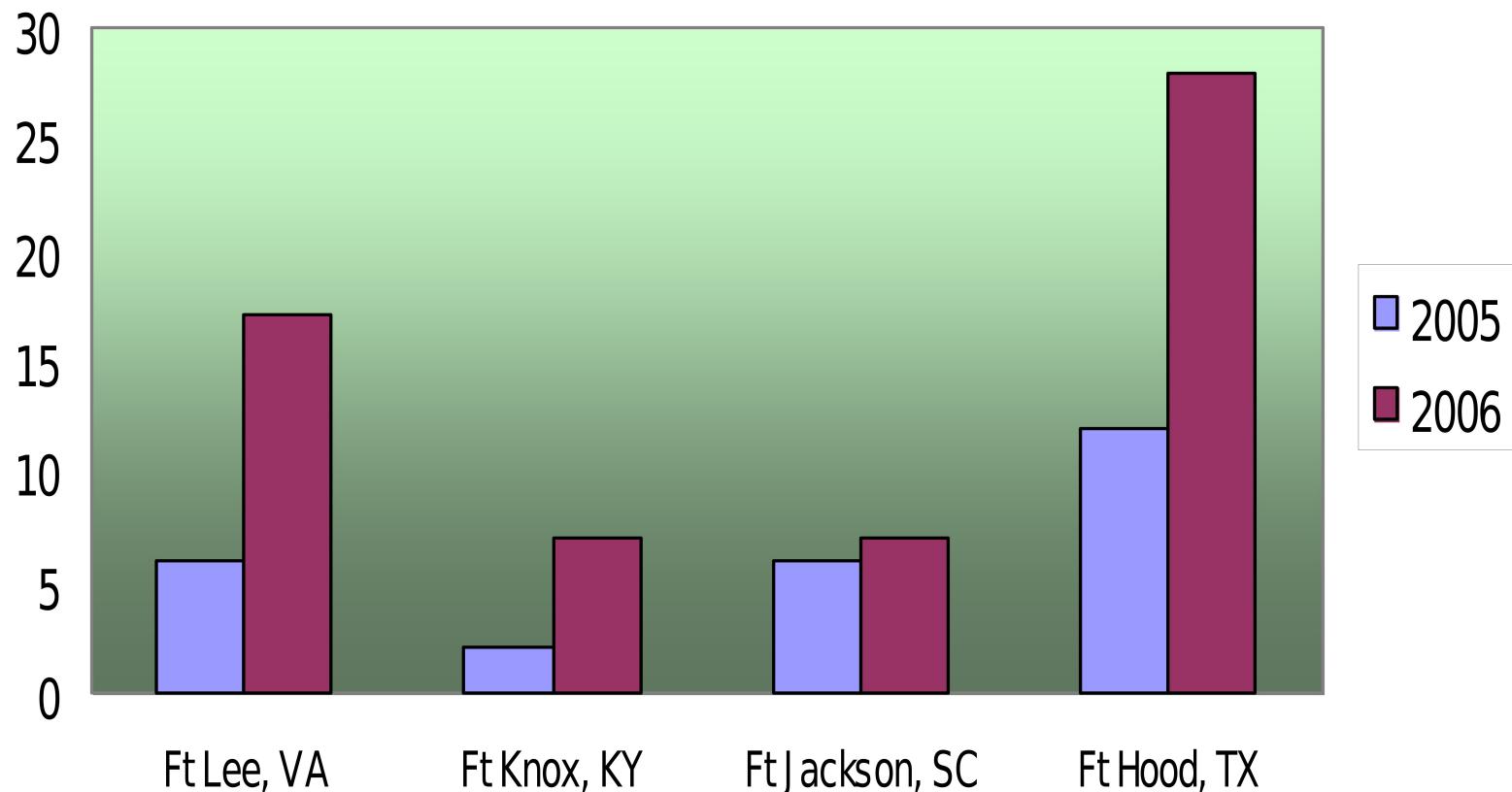
Incidence

- Gonorrhea

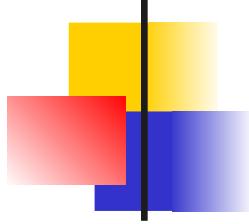
- Geographic - highest reports from the south
- West - increasing rates among MSM
- Age - men 20-24 yrs; Women 15-19 yrs, 80% of all cases occur 15-29 yrs
- Gender - male /female ratio 1:2.1
- Race/ ethnicity - disproportionately high in African-Americans, Hispanic & native Americans compared to Caucasians & Asians

US Army Medical Facilities

Gonorrhea



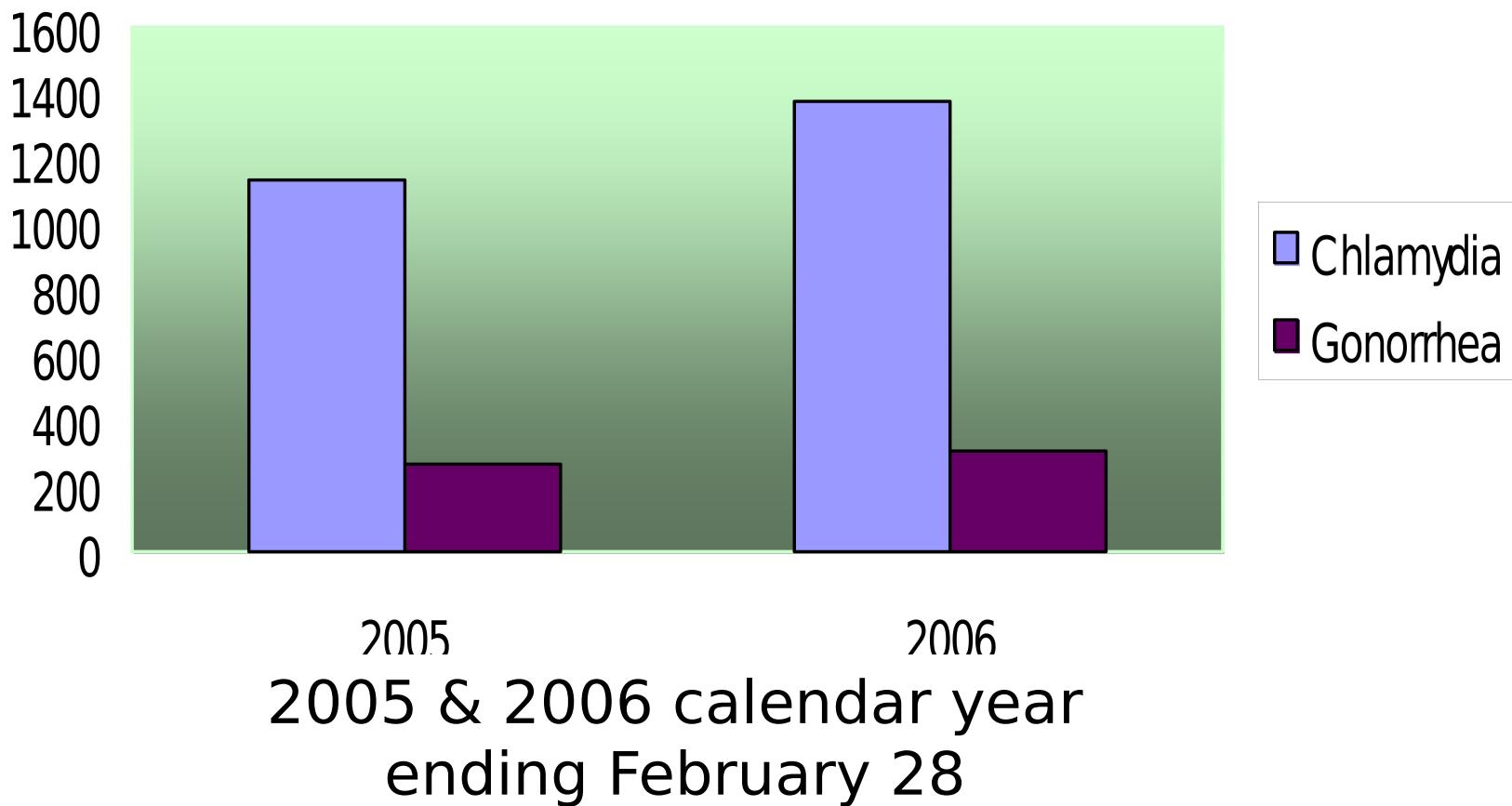
2005 & 2006 calendar year
ending February 28

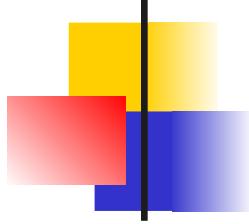


Problem with Control

- Latency
- Asymptomatic shedding
- Drug resistance
- Active division increases susceptibility to HIV

US Army Medical Facilities



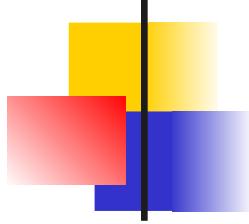


CHLAMYDIA

- Order: Chlamydiales
- Genus: Chlamydia
- Species: C. psittaci

C. trachomatis

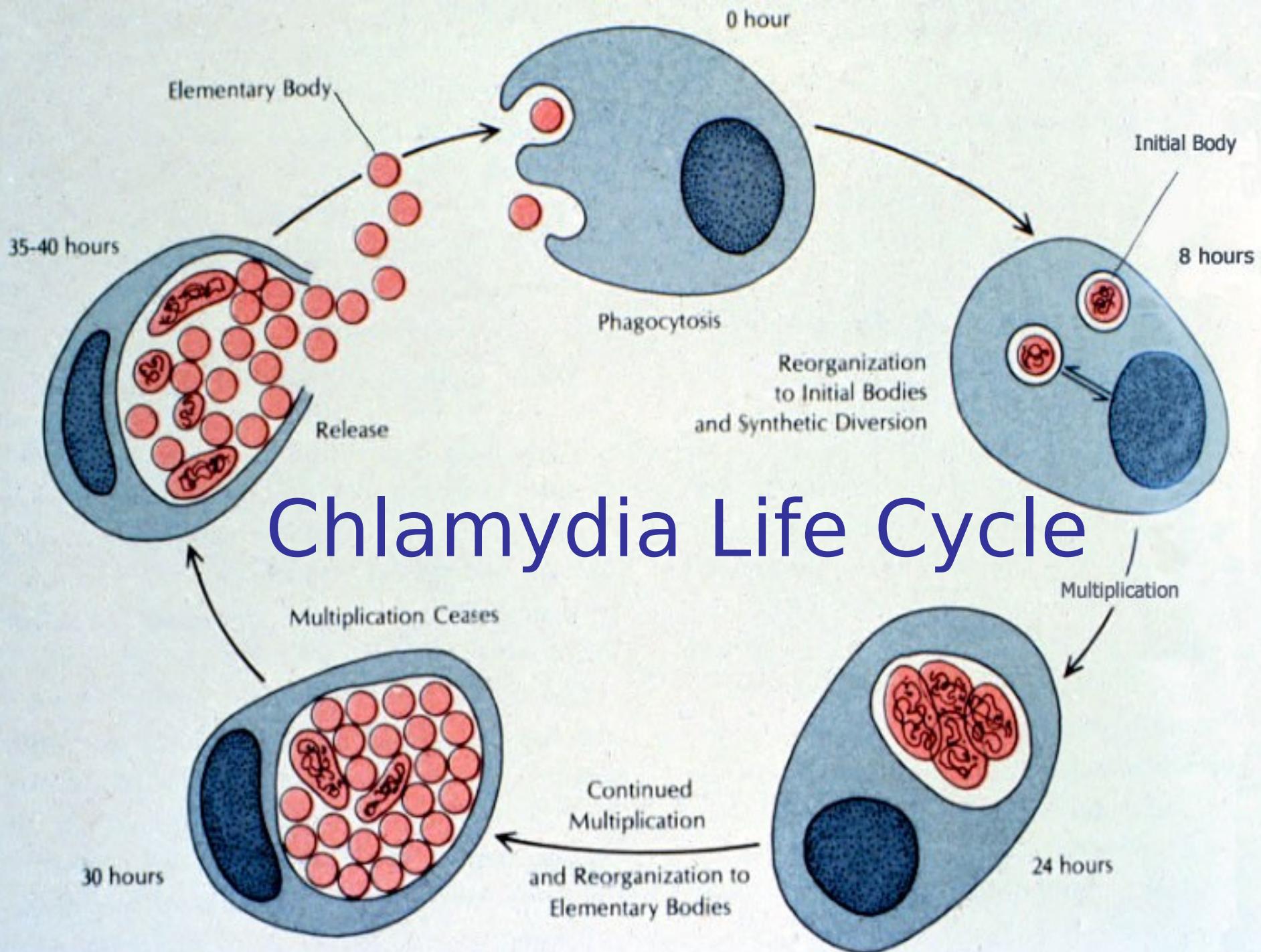
C. pneumoniae

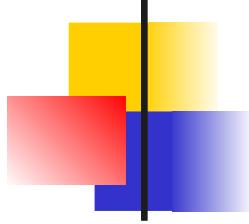


CHLAMYDIA

C. trachomatis

- Lymphaogramaloma Venereum
 - (LGV) – 3 serotypes L₁, L₂, L₃
- TRIC agents – 12 serotypes
 - A,B,Ba,C (trachoma)
 - D-K (genitourinary & ocular infections)

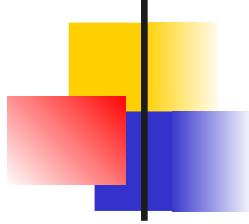




CHLAMYDIA

Common Characteristics:

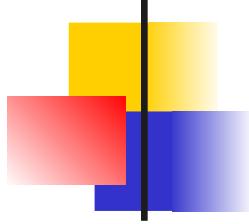
- Asymptomatic, persistent, culture positive eye, nasal, pulmonary, cervical, uterine, fallopian and urethral infections **are infectious !**
- Reinfection and relapse are common



CHLAMYDIA

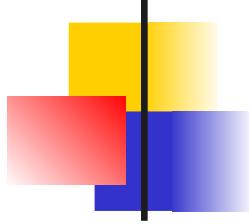
Transmission of Eye Infections:

- Children
 - At birth
 - Eye-hand contact
- Adults
 - Usually venereal
 - Genital eye contact



Chlamydial infections in Pregnant Women:

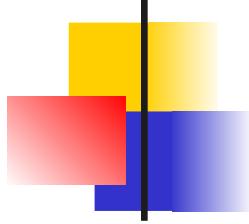
- 10-fold increase of stillbirths and neonatal death
- Postpartum P.I.D. common (38%)



CHLAMYDIA

Immunology

- Patient's immunologic response does not prevent relapse with same or similar chlamydial serotypes
- Satisfactory vaccination -not available
- Antibiotics may render patient culturally sterile for C. trachomatis
 - Persistence and clinical relapse may occur



Problems of Chlamydial Infections in Males:

- Urethritis
- Epididymitis
- Proctitis
- Other
- Adult trachoma

Gonococc al Urethritis





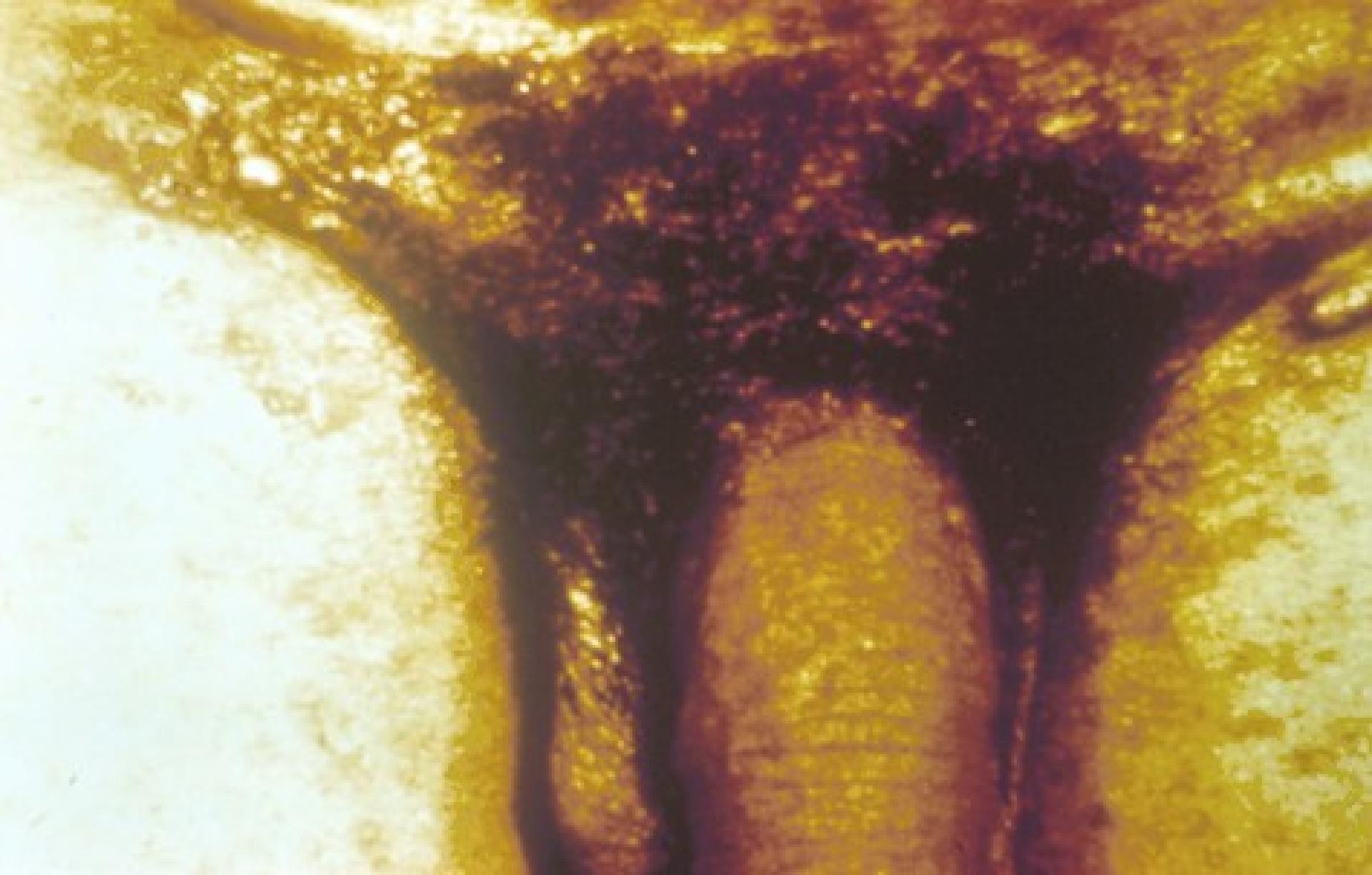
N.G.U. non-gonococcal
urethritis

Chlamydi al Orchitis



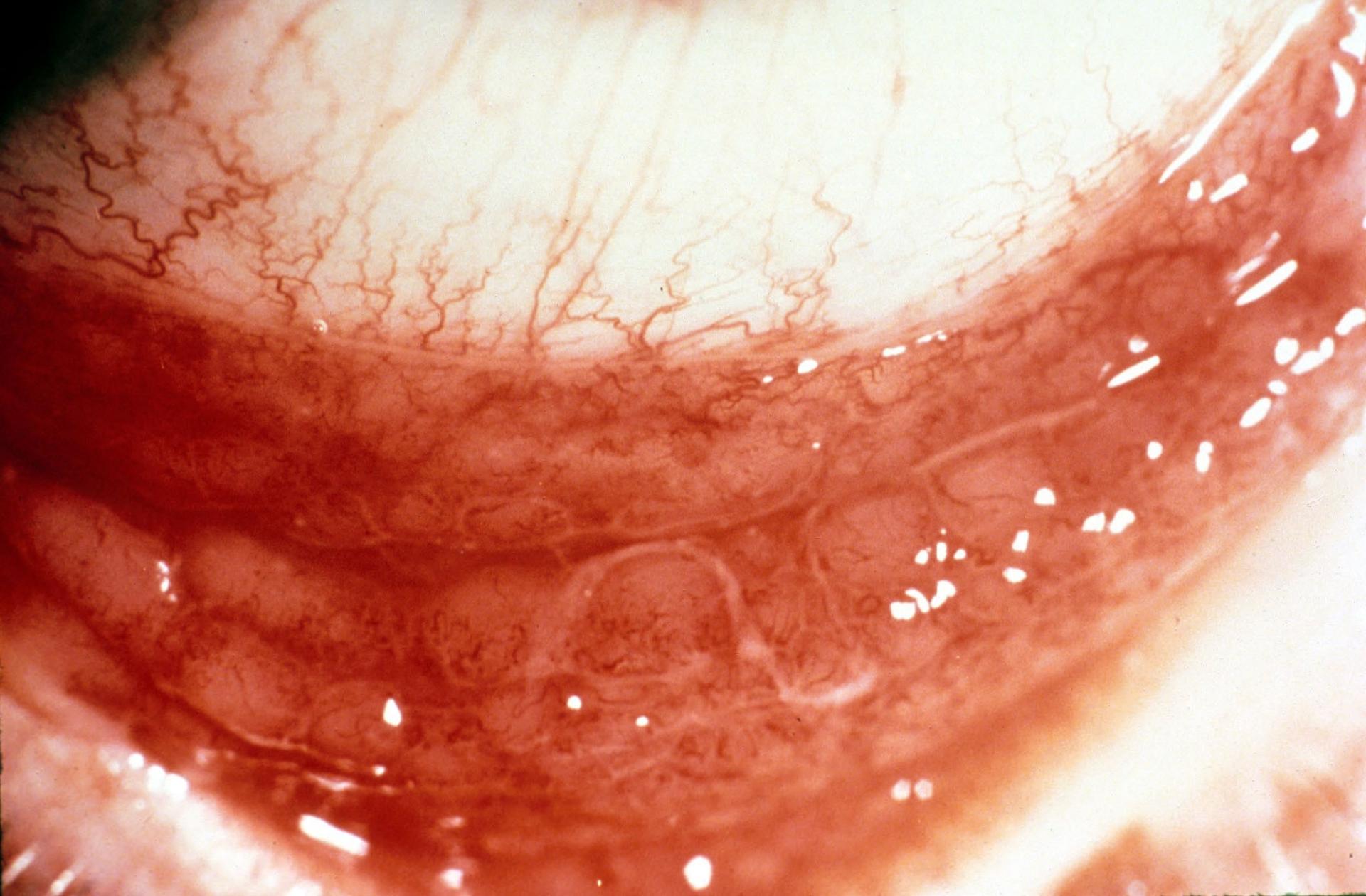


Cincinnati
STD/HIV **Chancre of L.G.V.**

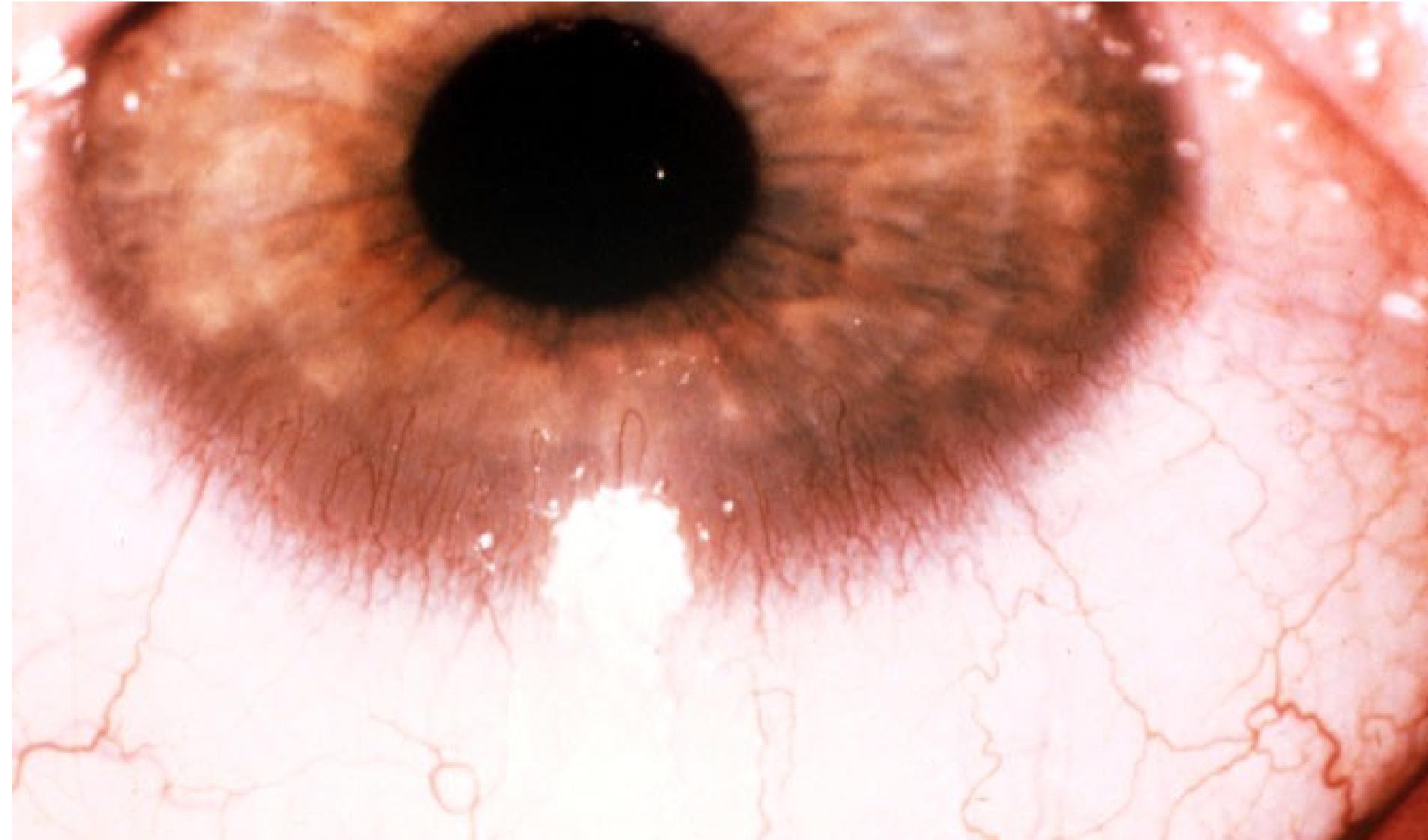


Cincinnati
STD/HIV

L.G.V.



Cincinnati
Chlamydial Conjunctivitis
STD/HIV

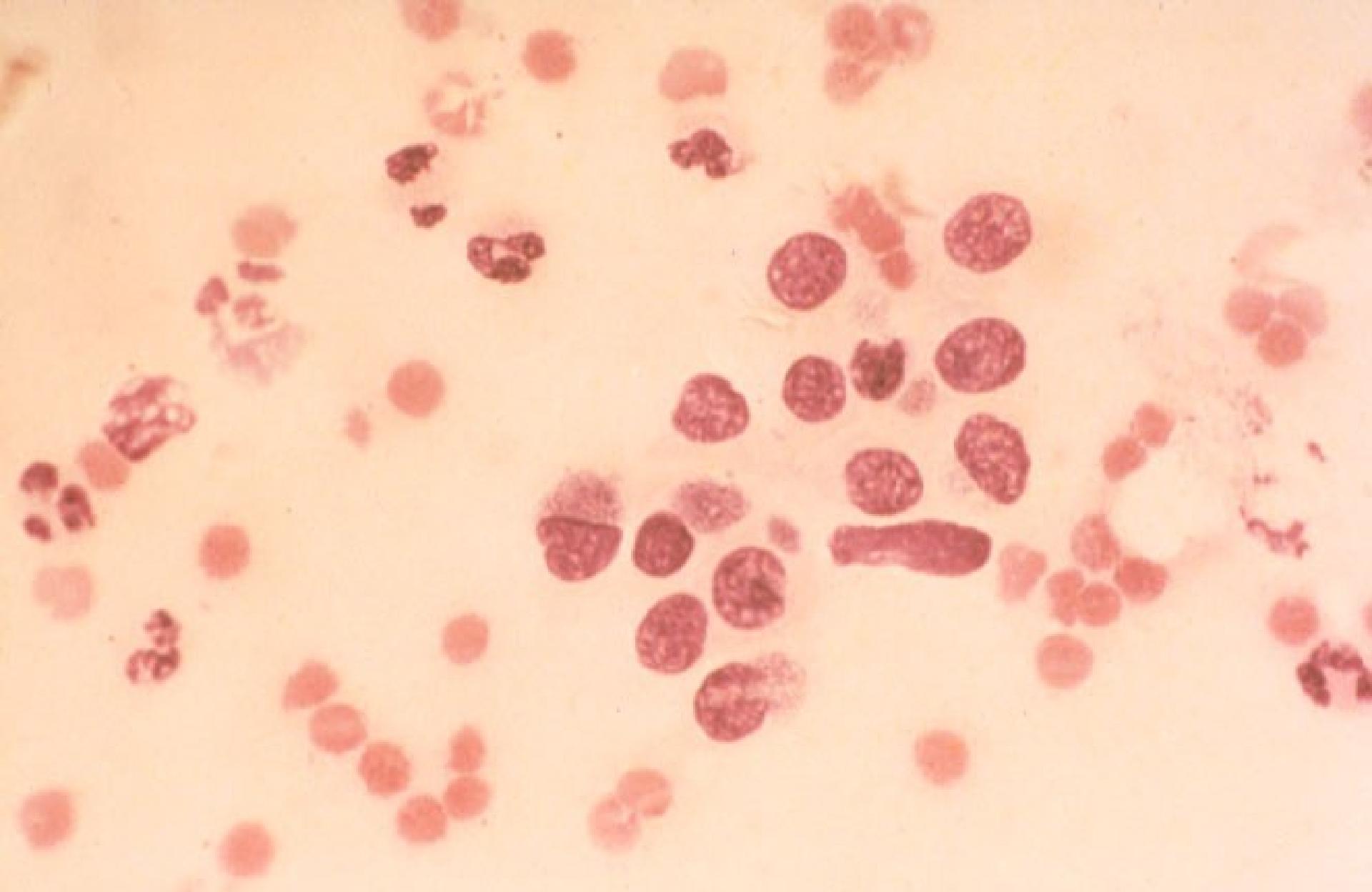


Neovascularization in Trachoma

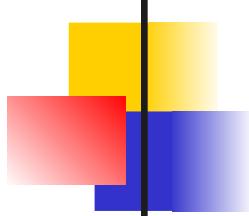
Cincinnati
STD/HIV



Cincinnati Trachoma Scaring
STD/HIV

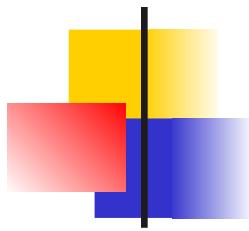


Elemental bodies - Trachoma



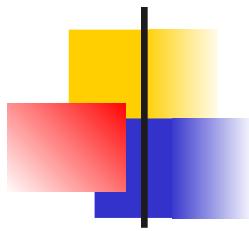
Problems of Chlamydial Infections in Females

- Asymptomatic carrier
- Cervicitis
- P.I.D. - Sterility
- Ectopic pregnancy
- Fetal wastage
- Postpartum morbidity
- Role of contraceptives
- Adult trachoma



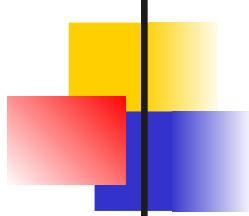
Chlamydial Infections – other Associated Adult Conditions

- Pneumonia
- Endocarditis
- Otitis media
- Fitz-Hugh Curtis syndrome
- Orchitis



Chlamydial Infections – other Associated Adult Conditions

- Batholithitis
- PID
- Reiter's syndrome
- Urethral syndrome



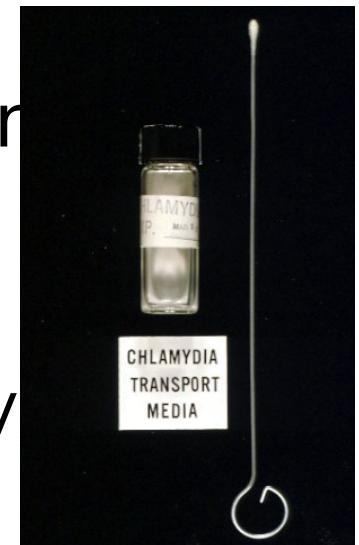
CHLAMYDIA

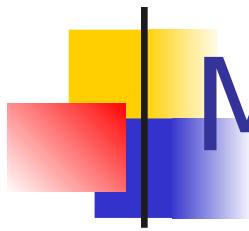
Laboratory Diagnostic Tools

Additional detailed information about Chlamydia screening is presented in the *Laboratory Methods Module*.

This module includes information

- Rapid tests
- Tissue culture
- EIA (ELISA - Enzyme Immune Assay)
- DNA probe
- DFA (Direct Florescence Assay)





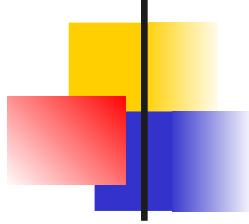
Chlamydia Molecular Technologies

Signal Amplified Assays

- Digene - (Manufacturer's name)

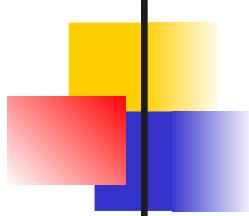
Target Amplified Assays

- PCR - (Polymerase Chain Reaction)
- LCR - (Ligase Chain Reaction)
- TMA - (DNA probe) (Transcription Mediated Assay)
- SDA - (Strand Displacement Assay)



CHLAMYDIA Therapy

- 2002 Guidelines for Treatment of Sexually Transmitted Diseases
 - MMWR May 10, 2002
- In our STD clinic
- In your clinic



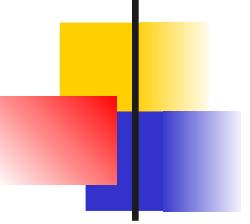
Chlamydial Infection Recommended Treatment

- Azithromycin (Zithromax) 1 g orally once Available in tablets and powder for oral suspension

OR

- Doxycycline* 100 mg orally twice a day for 7 days

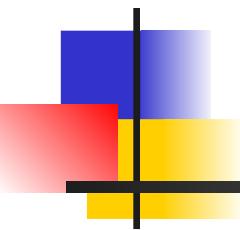
* Doxycycline is contraindicated in pregnant & lactating women



Chlamydial Infection Alternative Treatment

- Erythromycin base 500 mg orally 4 times a day for 7 days OR
- Erythromycin ethylsuccinate 800 mg orally 4 times a day for 7 days OR
- Ofloxacin* (Floxin) 300 mg orally twice a day for 7 days

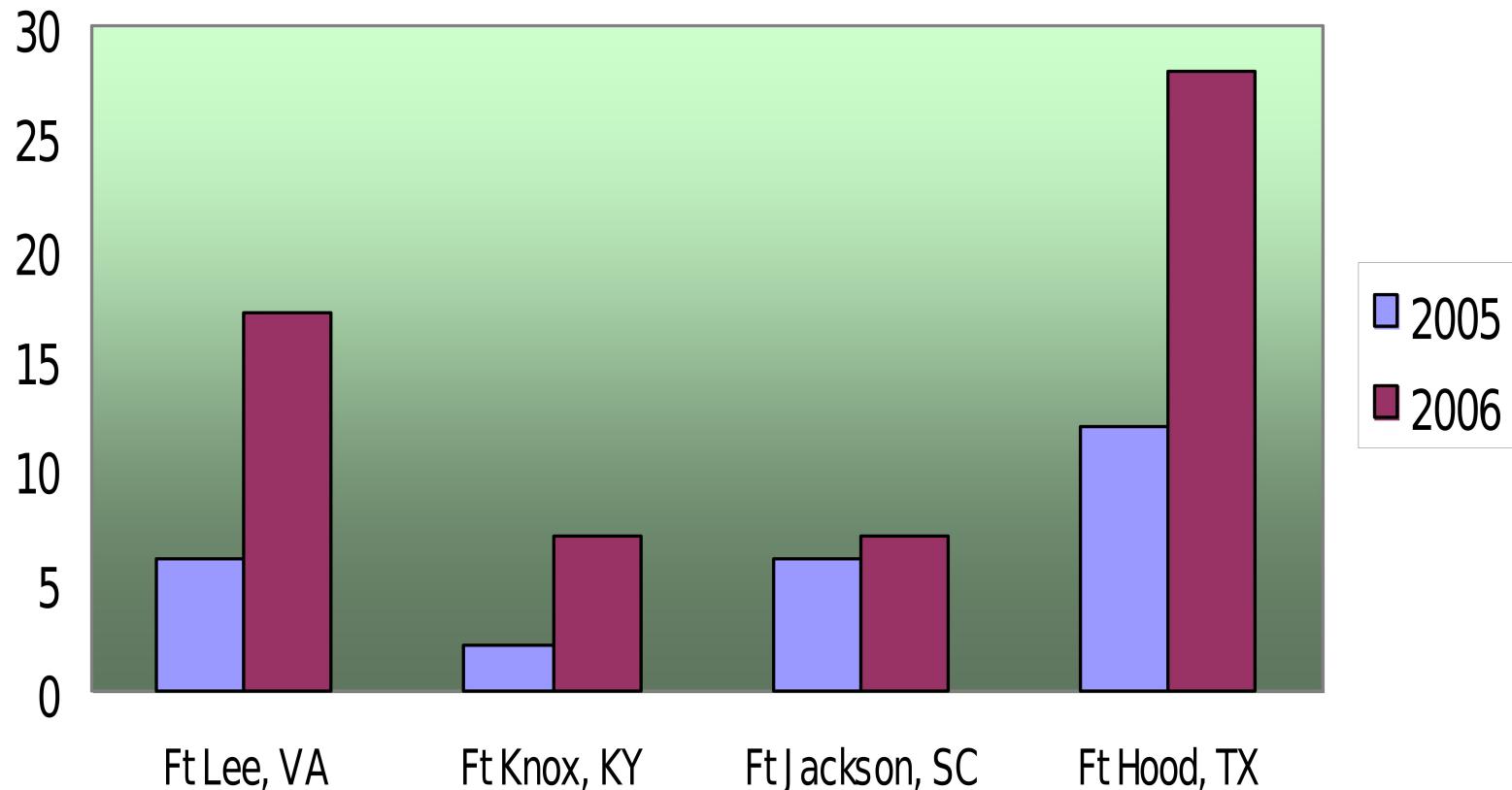
*Quinolones are contraindicated in pregnant and lactating women. They are not approved for use in children <18 yrs Refer to CDC guidelines for safety profile in children



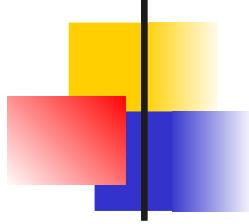
Gonorrhea

US Army Medical Facilities

Gonorrhea

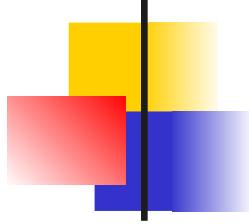


2005 & 2006 calendar year
ending February 28



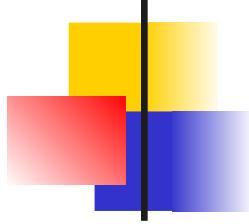
Gonorrhea Etiology

- N. gonorrhoeae
 - A gram negative diplococcus
- Sites of infection
 - Female & male reproductive tract
 - Joints, especially large ones
 - Anus – 35-50% of male
 - Tonsillar cysts
 - Sepsis - endocarditis, menigitis, ??? Etc.



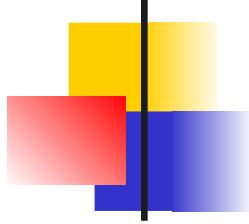
Gonorrhea Etiology

- Problems
 - Asymptomatic shedder
 - Antibiotic resistance increasing



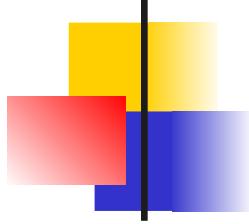
Gonorrhea Diagnosis

- Clinical
- Gram stain
- Culture
- Non-culture tests
 - Amplified tests
 - Enzyme immunoassay (EIA)
 - DNA probe (Gen-Probe PACE II)
 - Nucleic Acid Amplified test (NAATs)



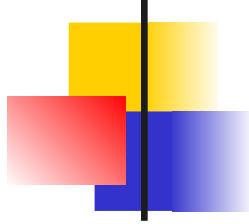
Gonorrhea Diagnosis

- Non-culture tests
 - Nucleic Acid Amplified test (NAATs)
 - Polymerase Chain Reaction (PCR-Amplicor®, Transcription-Mediated Amplification (TMA-GenProbe Aptima Combo2®), Strand Displacement Amplification (SDA-ProbeTec®)):
 - Sensitivity as good as culture or in setting where transport conditions are sub-optimal may be better than culture



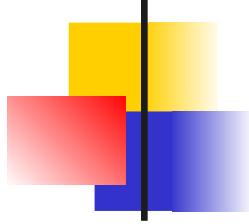
Gonorrhea

- 20% of gonorrhea patients have concurrent chlamydia infections!



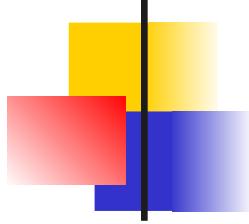
Gonorrhea

- Why is *Neisseria gonorrhoea* still a problem??



The Problem

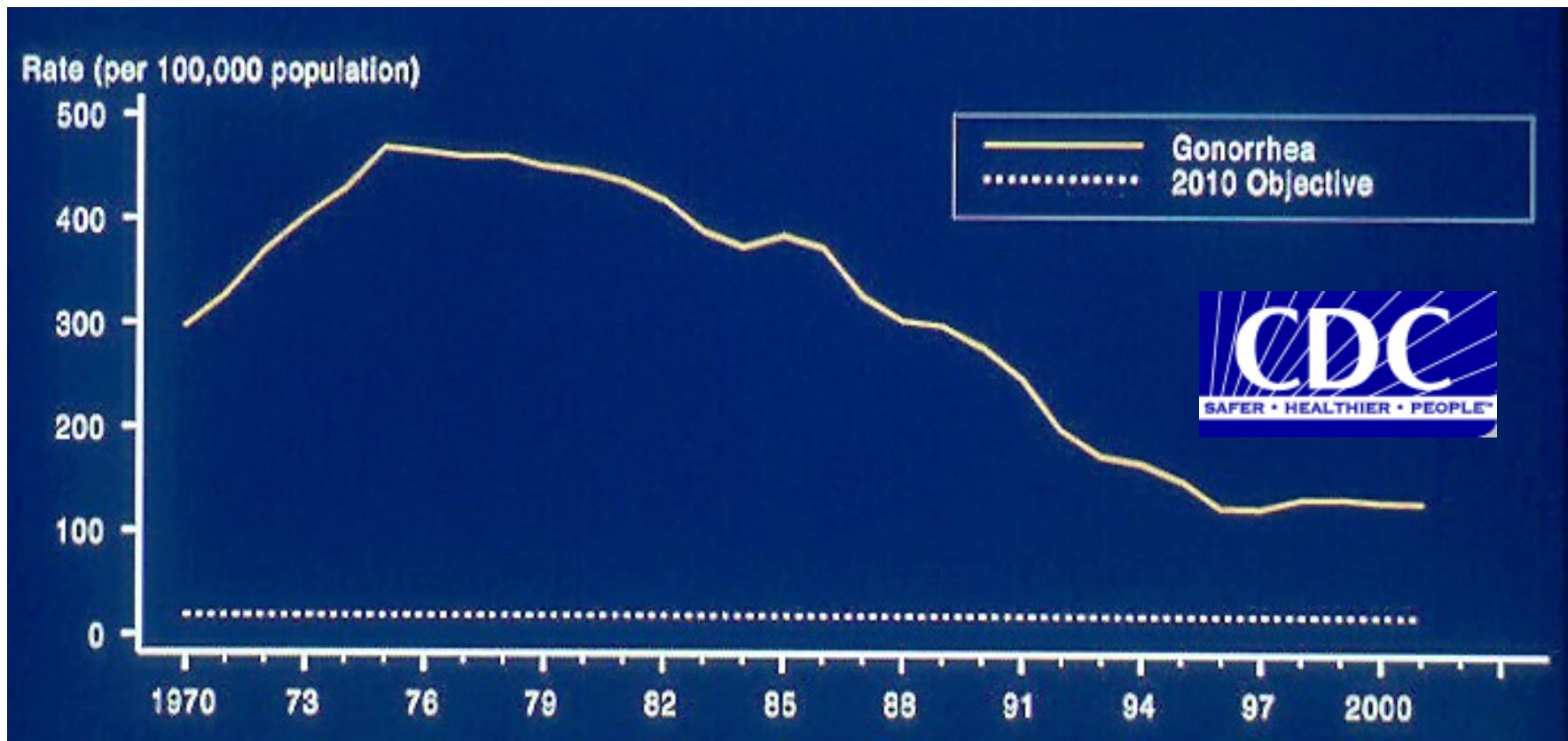
- NG infections declined until 1996
- Since that time, Incidence figures per/100,000 population have remained static and currently are increasing



The Problem

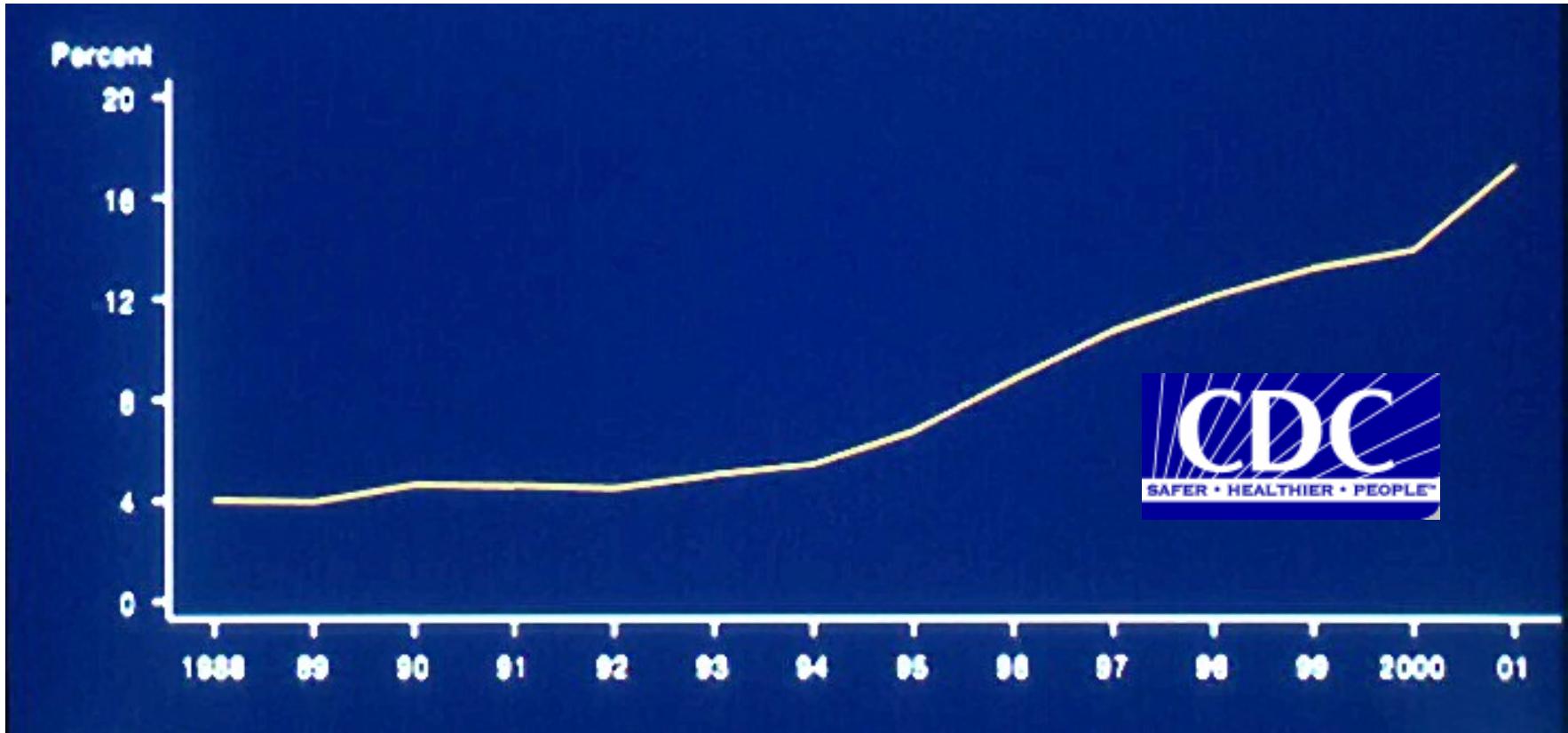
- Antibiotic resistance is increasing
- GC associated infections-
Chlamydia – are also increasing
- Role of Body regions in Antibiotic
“Resistance”

Gonorrhea – Reported rates: United States, 1970-2001 & the Healthy People Year 2010 Objective



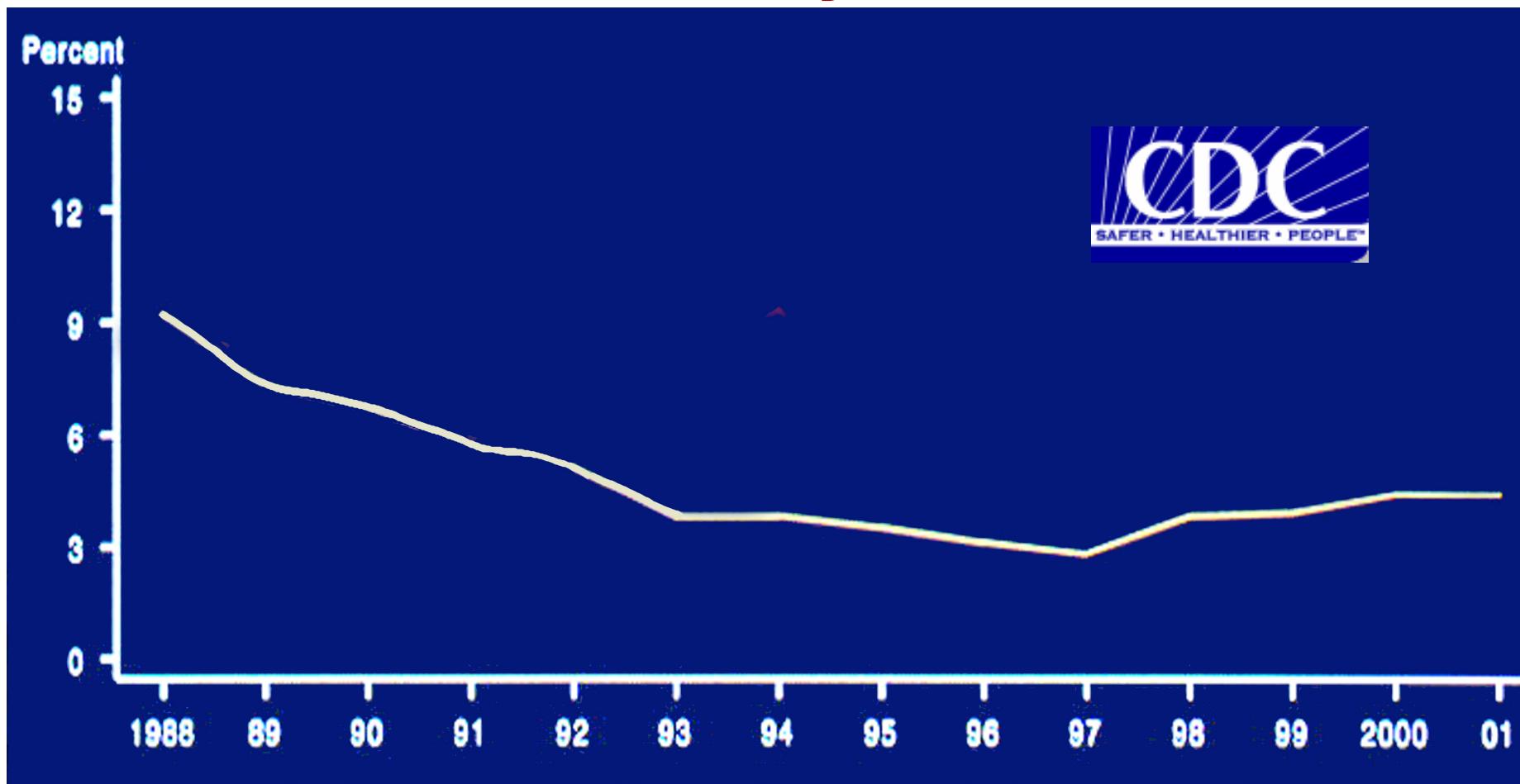
- Note: The Healthy People 2010 Objective for gonorrhea is 19.0 cases per 100,000 population

Gonococcal Isolate Surveillance Project (GISP)



- Percent gonorrhea cases that occurred among MSM 1988-2001

Chlamydia



- 1998-2001

Figure 8. Percentage of GISP cases that occurred among men who have sex with men (MSM), 1988-2004

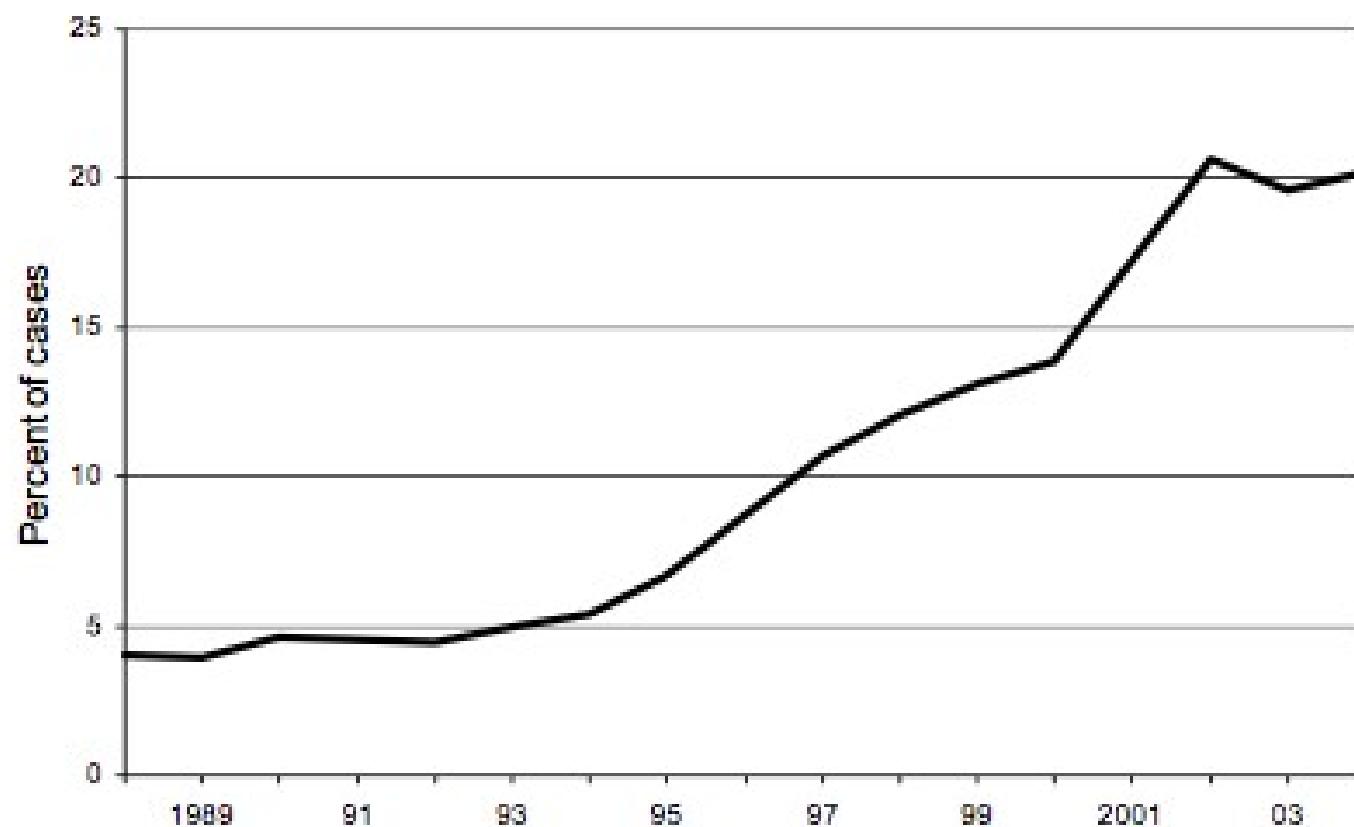


Figure 20. Prevalence of ciprofloxacin resistant *Neisseria gonorrhoeae* by site, 2002-2004

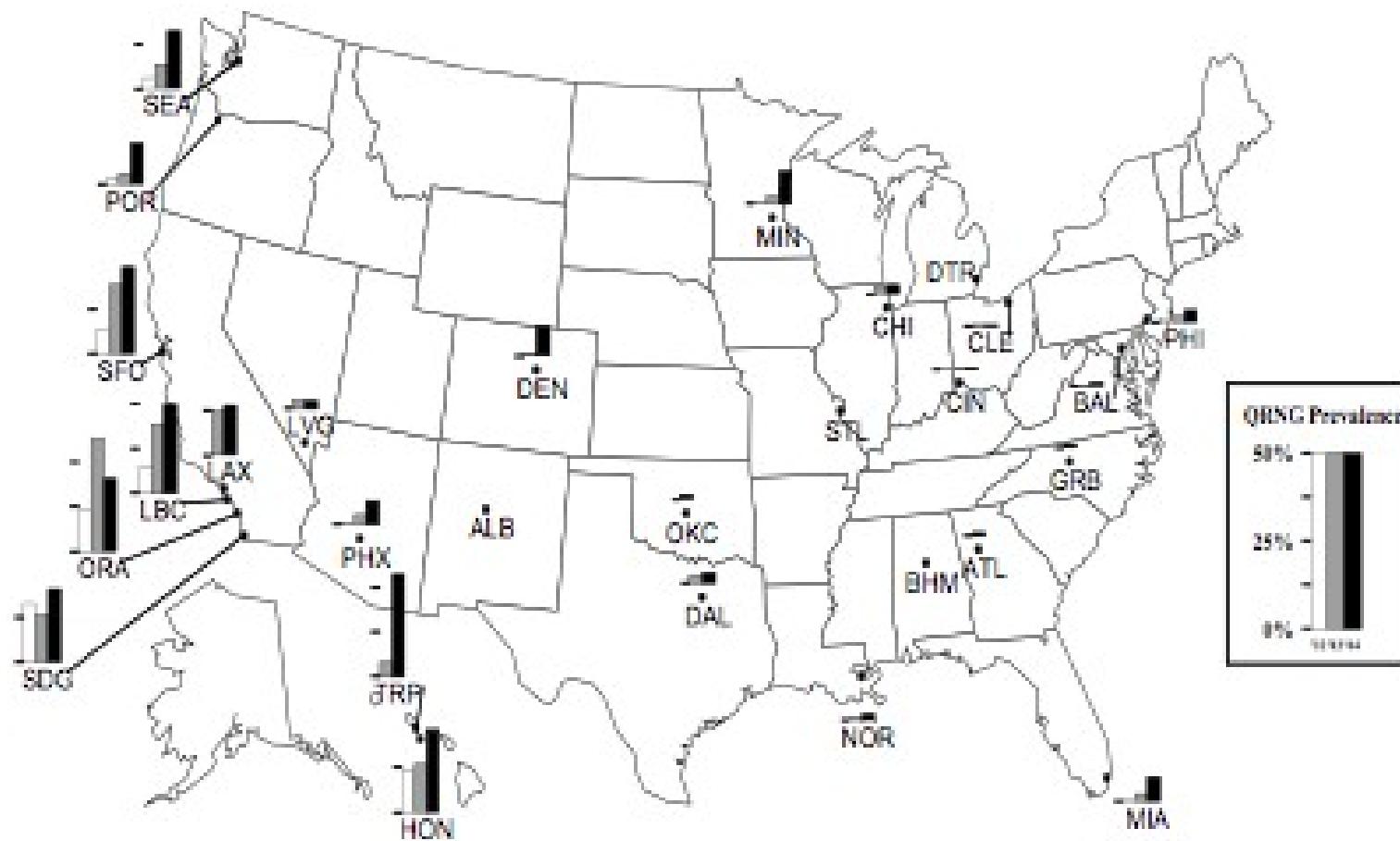
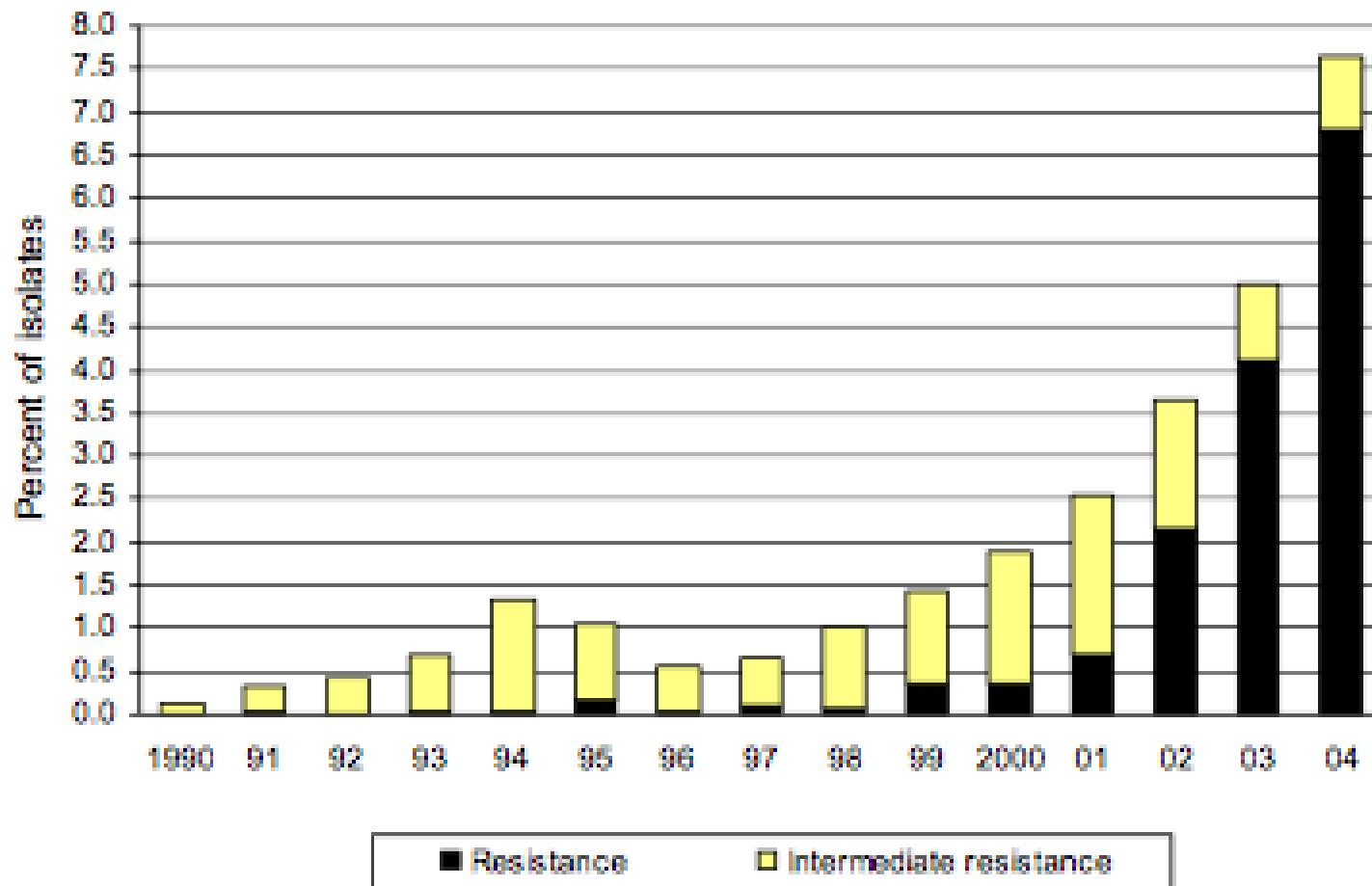


Figure 18. Percentage of GISP isolates with intermediate resistance or resistance to ciprofloxacin, 1990-2004

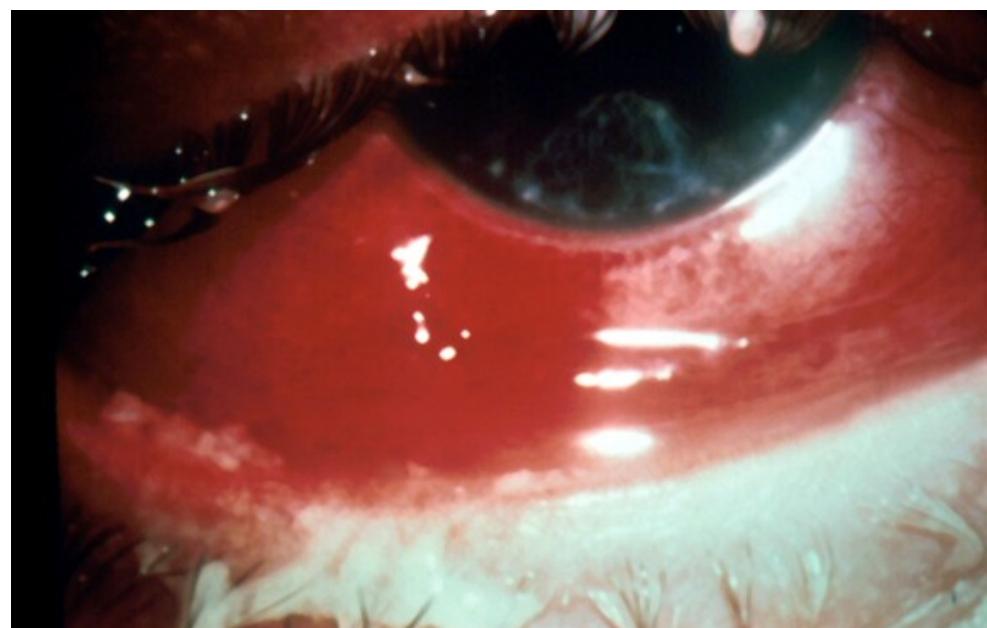
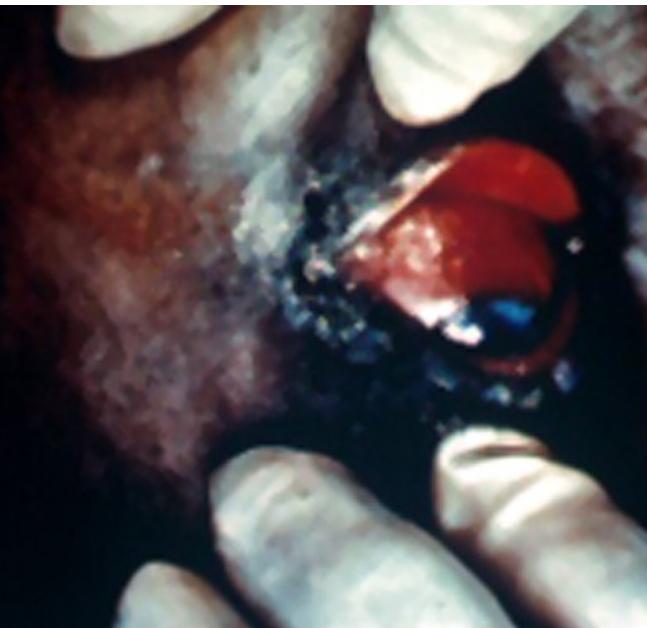




CINCINNATI
STD/HIV
PREVENTION
Training
Center



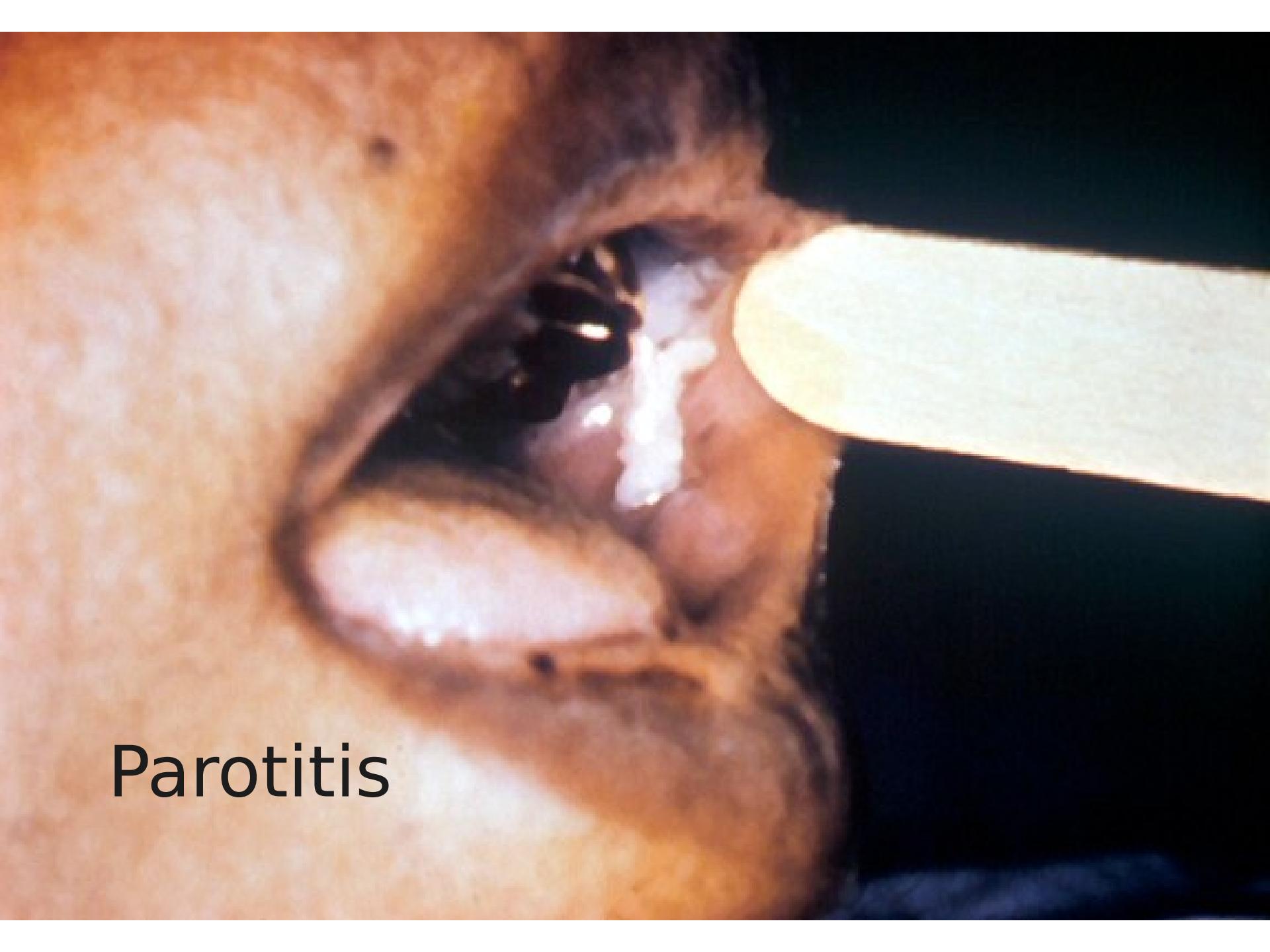
Clinical Disease



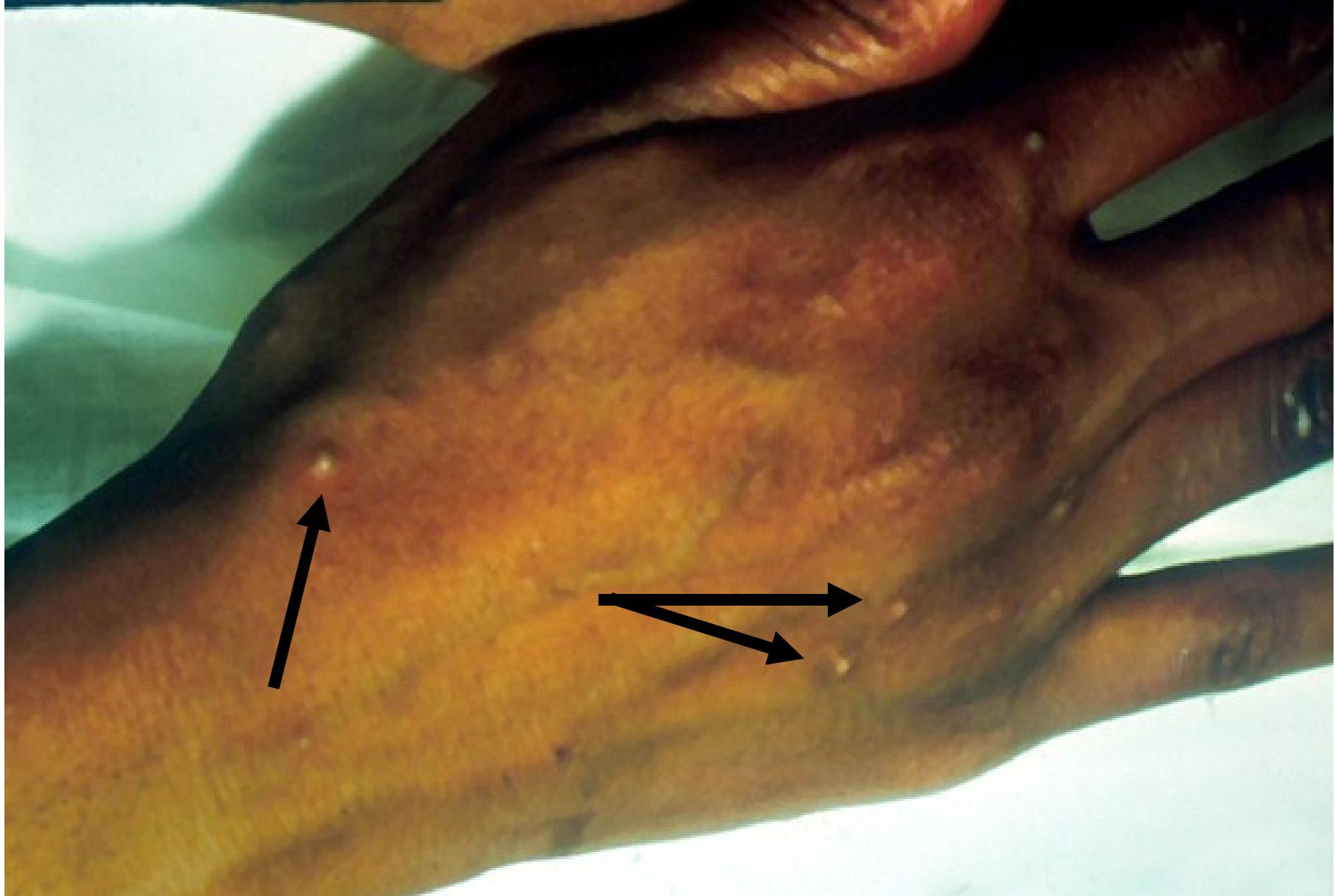
Eye

Gram Stain



A close-up photograph of a dog's mouth. The dog has a light brown or tan coat. The inside of its mouth is pink, and there is visible swelling and discoloration around the salivary glands, particularly on the left side. A white dental probe is being used to examine the teeth and gums. The background is dark.

Parotitis



Emboli



Emboli

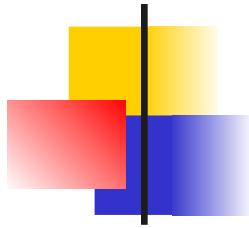


Emboli



Cincinnati
STD/HIV

Arthritis



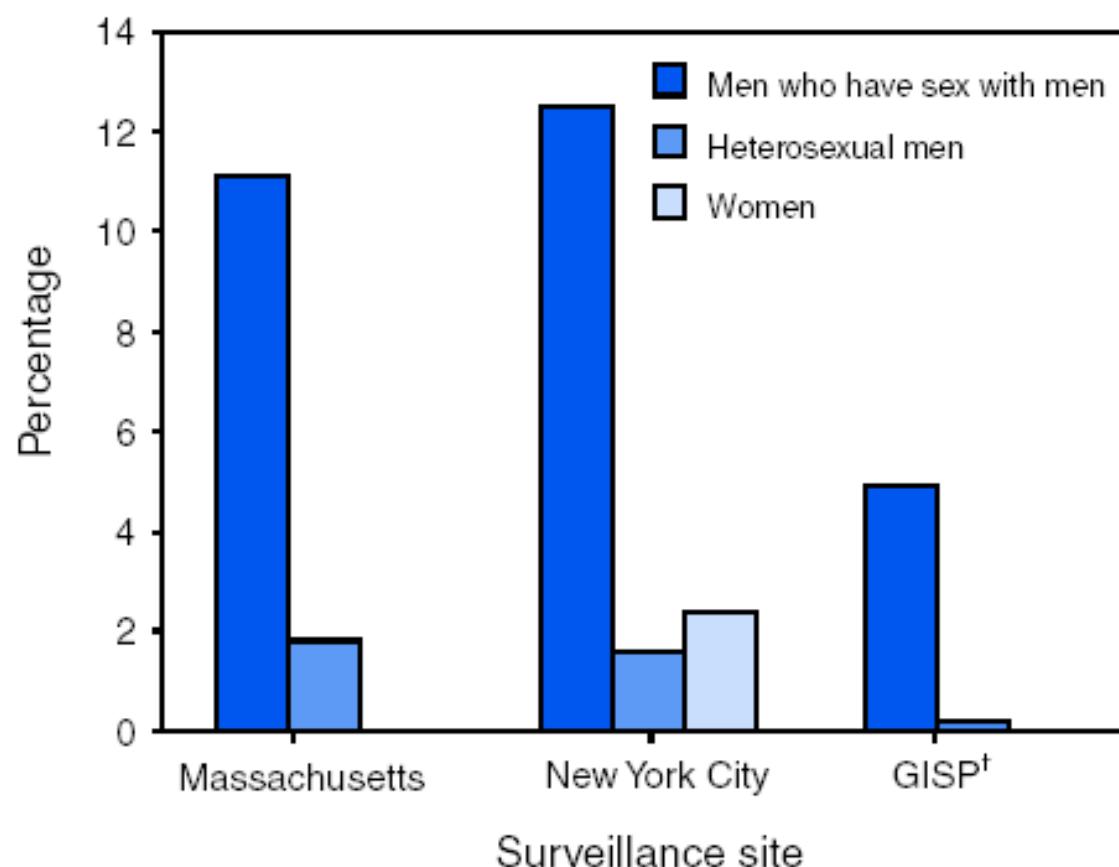
Gonorrhea Treatment

- An increasing problem

<http://www.cdc.gov/std/treatment/cefixime.htm>

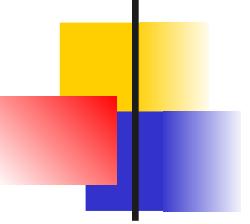
http://www.mass.gov/dph/cdc/std/ca_gc.htm

FIGURE. Prevalence of fluoroquinolone-resistant *Neisseria gonorrhoeae* infection, by sex, sexual behavior, and surveillance site — United States, 2003*



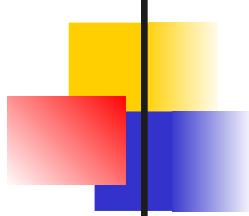
* Data from Massachusetts and New York City are from sexually transmitted disease clinics. In the Gonococcal Isolate Surveillance Project (GISP), data are presented for all areas, excluding Hawaii and California; no women are surveyed in GISP. All data are preliminary.

[†] Gonococcal Isolate Surveillance Project.



Gonococcal Infections Recommended Treatment

- Patients with gonococcal infections should also receive an adequate treatment for Chlamydia trachomatis since co-infection can occur in up to **40%** of cases



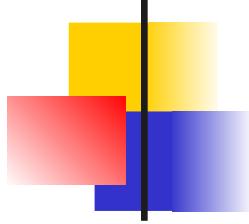
Gonococcal Infections Recommended Treatment

ADULTS

Cervix, Urethra, Rectum

- Ceftriaxone (Rocephin) 125 mg IM once OR
- Cefixime (Suprex) 400 mg orally once OR
- Ciprofloxacin* (Cipro) 500 orally once OR
- Ofloxacin* (Floxin) 400 mg orally once

*Quinolones are contraindicated in pregnant and lactating women. They are not approved for use in children <18 yrs Refer to CDC guidelines for safety profile in children



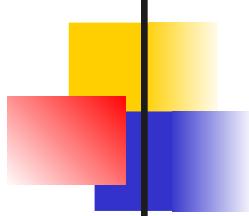
Gonococcal Infections Alternative Treatment

ADULTS

Cervix, Urethra, Rectum

- Spectinomycin* 2 g IM once (see CDC guidelines for other cephalosporins and Quinolones)

*Less effective against pharyngeal gonorrhea

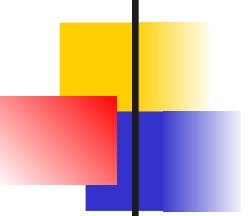


Gonococcal Infections Recommended Treatment

ADULTS
Pharynx

- Ceftriaxone (Rocephin) 125 mg IM once
 - OR
- Ciprofloxacin* (Cipro) 500 orally once
 - OR
- Ofloxacin * (Floxin) 400 mg orally once

*Quinolones are contraindicated in pregnant and lactating women. They are not approved for use in children <18 yrs Refer to CDC guidelines for safety profile in children



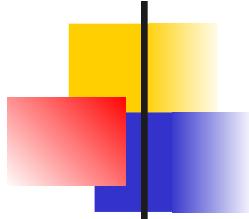
Gonococcal Infections Recommended Treatment

ADULTS

Cervix, Urethra

- Gatifloxacin * (Tequin) 400 mg orally once

*Quinolones are contraindicated in pregnant and lactating women. They are not approved for use in children <18 yrs
Refer to CDC guidelines for safety profile in children

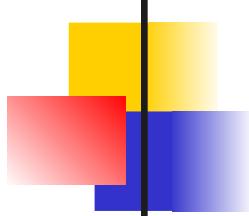


Antimicrobial Resistance

Remains an important consideration in treatment of gonorrhea

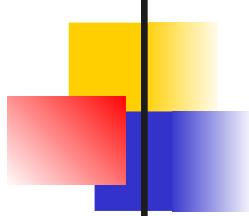
2002

- 20.9% of isolates, resistant to penicillin & tetracyclines or both
- 2.2% (116) in 2002 in 13 clinics as compared to 0.7% (38) ciprofloxacin resistant in 6 clinics in 2001
- Nationally in 2003 the resistance to cipro is 4.1% as opposed 2.2% in 2002 and 0.7% in 2001
- Resistance to ciprofloxacin first identified in Gonococcal Isolate Surveillance Project (GISP) in 1991



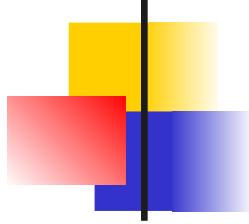
Antimicrobial Resistance

- In Honolulu, Hawaii, the rate was 20.3% in 2001 compared to 14.3% in 2000 and 11.7% in 2002, 13.3% in 2003
- Fluoroquinolones still not recommended for treatment of gonorrhea acquired in Hawaii (significant increase in California in 2002)



Antimicrobial Resistance

- Among men having sex with men the resistance to cipro is 15% in 2003 as opposed to 7.2% in 2002
- Four (0.1%) isolates had decreased susceptibility to cefixime (Suprex) and not yet with ceftriaxone (Rocephin)

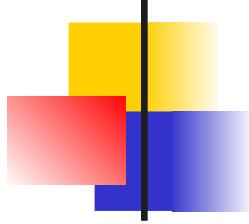


Gonococcal Infections

Epididymitis

The recommended regimen of ceftriaxone and doxycycline is for epididymitis most likely caused by NG or CT infection

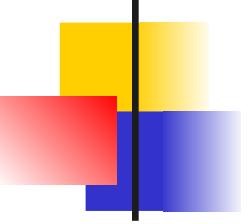
The alternative regimen of ofloxacin is recommended if the epididymitis is most likely caused by enteric organisms or Patients allergic to cephalosporins and/or tetracycline



Gonococcal Infections Recommended Treatment

Epididymitis

- Ceftriaxone (Rocephin) 250mg IM
single dose
PLUS
- Doxycycline 100mg orally twice a day for 10 days



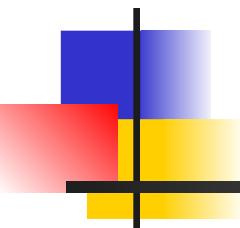
Gonococcal Infections Alternative Treatment

Epididymitis

- Ofloxacin* (Floxin) 300 mg orally twice a day for 10 days

*They are not approved for use in children <18 yrs Refer to CDC guidelines for safety profile in children

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Fax:

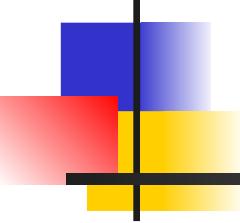
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